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MLTRC
MISSOURI LOCAL TRANSPORTATION RESOURCE CENTER

UMR

MOinfo

SPRING ◆ 2003

in this issue

SAVE WITH THE COOP PROCUREMENT PROGRAM

NEW WEBSITE TO AID AGENCIES with traffic congestion

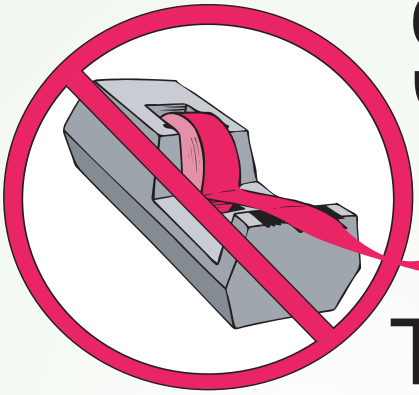
MINK3:
It's coming!

MAY 12–14
54th Annual MO Traffic Safety Conference and Seminar
Columbia, Missouri
(573) 882-0071

JUNE 22–25
8th International Conference on Low-Volume Roads
Reno, Nevada
www.t2.unr.edu

JULY 28–30
2nd Urban Street Symposium
Anaheim, California
gulliver.trb.org/conferences/USS2

OCTOBER 14–15
MINK Conference
St. Joseph, Missouri
web.umr.edu/~mltrc



$aving$

Without All The Red Tape

The Cooperative Procurement Program allows political subdivisions, such as cities and counties, the opportunity to purchase new equipment and supplies at the bid prices available to the Missouri Department of Transportation (MoDOT). Salt, trucks, material spreaders, and rotary mowers are just a few examples of the items which can be purchased through the program.

By purchasing through the plan, cities and counties can save money, as the prices negotiated by MoDOT are often lower due to the quantity of items procured. Indirect savings can also be realized in the reduced duplication of the time and effort required to advertise, analyze, and award bids on products.

Participating cities and counties can review available bids online and work directly with individual vendors for purchasing and delivery arrangements. They receive all the benefits of MoDOT contract pricing, without the hassle of the bid process or centralized procurement red-tape.

The program is made possible by MoDOT and is administered by MLTRC. The authorization for political subdivisions to purchase jointly is granted in the State-Local Technical Services Act, Chapter 67.360, RSMo.

If you are interested in learning more about the program, applying for a resolution, or have a resolution and would like to know more about how to access online bid information, please contact us via email to mltrc@umr.edu or by phone at 1(866) MO ROADS.

THE FINE PRINT:
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FHWA Unveils New Website

To Help State, Local Agencies Manage Traffic Congestion

The U.S. Department of Transportation's Federal Highway Administration (FHWA) today announced a new Web site to provide state and local agencies simple access to a variety of tools and information on traffic congestion and to help them find solutions to traffic problems in their areas.

"Relieving traffic congestion is one of our top priorities," FHWA Administrator Mary E. Peters said. "We are working closely with state and local officials to develop and carry out a comprehensive set of solutions designed to help reduce traffic congestion nationwide. This includes providing them with valuable information that can help them manage traffic conditions in their areas."

The new "Congestion and Traffic" Web site — at www.fhwa.dot.gov/congestion — is part of the FHWA's efforts to help state and local transportation agencies develop initiatives to reduce congestion through effective system management and operations strategies.

A section on program tools offers specific information on the most prevalent causes of traffic congestion: traffic incidents and work zones. About half of all traffic congestion is caused by temporary disruptions such as traffic incidents and work zones, dramatically reducing the available capacity and reliability of the entire transportation system.

The agency developed the Congestion and Traffic Web site in response to the need on the part of state and local partners for technical guidance and best practices. The new site consolidates all the information found about traffic congestion on FHWA's Web site onto one portal, linking to the various FHWA programs and services designed to help mitigate congestion. It also links to specific state programs designed to manage congestion and to articles, research, and other information related to traffic conditions.

More information on traffic operations is available at
www.ops.fhwa.dot.gov

HISTORIC BRIDGE FOR SALE

Texas County, MO The Jacks Fork Bridge (No. J-665) carrying Route 17 over Jacks Fork about four miles north of Mountain View, is available for adaptive reuse at a new location. If the bridge is transferred to another party, the transfer deed may include preservation covenants that require the new owner to preserve, and maintain the bridge in accordance with established standards for historic bridges. Funds may be available for reuse of the bridge.

Description: This National Register of Historic Places eligible bridge was constructed in 1931 by Kelly & Underwood Construction Company. It consists of two skewed, rigid-connected Warren pony trusses with 3 steel stringer approach spans. The substructure consists of concrete abutments, wingwalls, and concrete dumbbell piers. The overall length is 329 feet with two 100-foot main spans. The roadway width is 20 feet. The Jacks Fork Bridge will be replaced with a new structure on new alignment.

Contact: Randall Dawdy
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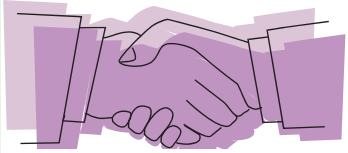


PEER-TO-PEER

WORKING TOGETHER FOR A BETTER TRANSPORTATION SYSTEM

FHWA has initiated a new, cost-free service designed to assist public agencies in effectively applying traffic control devices and the MUTCD (Manual of Uniform Traffic Control Devices): the "Peer-to-Peer for Traffic Control Devices" (P2P TCD) program.

THE SERVICE WILL...

- provide short-term assistance in matters related to traffic control devices;
- address specific technical issues in the MUTCD;
- spark dialogue and foster an "esprit de corps" among professionals in the transportation community; and
- contribute to a better transportation system through optimized traffic performance and improved safety.

The P2P TCD program is designed to provide an easy-to-use system by which practitioners can receive assistance from other practitioners.

HOW IT WORKS: Local, county, regional, or state transportation agencies request assistance by email or by calling a toll-free number. The program coordinator matches each request with a peer — a transportation professional, who is experienced and knowledgeable in the relevant technical area(s). The peer, in turn, will contact the requesting agency to work out the details of the assistance to be provided within the program framework. The peer's assistance is short-term and will address specific, technical issues.

To request assistance, email P2P@fhwa.dot.gov or call toll-free at 1-888-700-PEER (7337). For more information on the program or to participate in related online discussions visit mutcd.fhwa.dot.gov

MINK 3

the conference for county engineers

WHEN:
October 14-15, 2003

WHERE:
Historic Riverfront Hotel
St. Joseph, Missouri

REGISTRATION FEE:
$30

ROOM COST:
$55 + tax

REGISTER ONLINE:
web.umr.edu/~mltrc

PUBLICATIONS

Benefits Assessment of Advanced Public Transportation System Technologies Update 2002 — Presents the results of an analysis conducted by the Volpe Center, for the FTA, to provide an "order-of-magnitude" estimate of the expected benefits to the transit industry with the application of APTS technologies. FTA-MA-26-7007-00-4

The Public Transportation System Security and Emergency Preparedness Planning Guide — prepared to support the activities of public transportation systems to plan for and respond to major security threats and emergencies. DOT-FTA-MA-26-5019-03-01

Hazardous Materials Safety — covers hazardous materials definitions and classifications, hazard communications, shipper and carrier operations, and packaging and container specifications. DHM50-0016-0801

Traffic Calming Primer — Suggests that the most effective traffic calming efforts take an integrative approach to traffic calming that combines engineering solutions with enforcement efforts, public education campaigns, and neighborhood enhancements.

Speed Zone Guidelines: A Proposed Recommended Practice — Addresses what criteria should be used to establish the need and potential effectiveness of speed zones, and the appropriate speed limit if a speed zone is established. Pub. No. RP-024

Innovative Approaches to Transportation — A Guidebook — Cooperative effort between the Federal Highway Administration Federal Lands Highways and the United State Department of Agriculture Forest Service. Outlines a strategy to better integrate transportation planning activities conducted by the states, local transportation officials and the USDA Forest Service for federally funded projects that provide access to or within national forest land. Covers: What a new approach to transportation; Forest Service transportation planning process; FHWA and FTA funding programs and the transportation planning process; implementation funding; project-level highway issues and opportunities; and success stories. 0177 1806-SDTDC

Safety Effectiveness of Intersection Left- and Right-Turn Lanes — TechBrief — The results of research on the safety effectiveness of providing left- and right-turn lanes for at-grade intersections. Report No. FHWA-RD-02-089

CD-ROMS

Culvert Management System (CMS) — Contains a culvert management system program and a CMS Users Manual. CMS modules include inventory, condition, needs, funding and work scheduling. FHWA-LT-02-001

Maintenance of Signs and Sign Supports for Local Roads and Streets Presentation and Instructor's Guide — Designed to accompany Maintenance of Signs and Sign Supports for Local Roads and Streets: A Guide for Street and Highway Maintenance Personnel. Contains a non-linear PowerPoint® presentation for trainers to use when presenting information about sign maintenance at workshops or conferences. Contains the necessary presentation files, an Instructor's Manual, and a brief description of how the presentation works.

Red Light Green Light — Contains information on pedestrian safety and discusses ideas for enforcing laws on obeying traffic signals.

Advanced Public Transportation Systems Publications — A variety of technical briefs regarding public transportation systems in PDF format with a user-friendly, Acrobat-driven search and navigation interface.

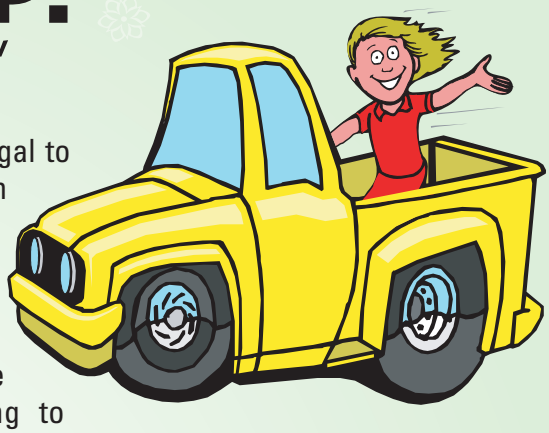
Long Term Pavement Performance, January 2003 — A central database that uses Table Navigator software, which offers users a fast and easy means of navigating the complex table and record structure of the database.

NDC Publications and U.S. Waterway Data CD — Contains a source of information about waterborne transportation and the waterway infrastructure. CEIWR-NDC

To check out items in the MLTRC library, please visit our website or call toll free 1-866-MO-ROADS (667-6237).

SEASONAL TIP:

Don't Let Kids Be "Cargo"



Pickup up truck owners will go to great lengths to prevent their cargo from falling out of the back. Perhaps you've seen furniture, bicycles and building materials carefully tied and attached in the cargo area.

Sadly, many pickup owners do not take the same level of precaution when living "cargo" is riding in the back. Dogs and children are often allowed to roam freely in the open-air area of the truck — just asking for a life-threatening situation. One of the most dangerous ways to transport children is in the cargo area of a pickup truck.

Every year, approximately 200 people die as a result of riding in cargo areas, and more than half of them are children and teenagers, say the experts at the National Highway Safety Traffic Administration (NHSTA). Even though 24 states to date have declared it illegal to allow children to ride in the cargo area of a pickup on public roadways, people are still failing to heed the warnings.

For those riding in the cargo area, the most common cause of injury and death is due to ejection during collisions. Even if no collision occurs, cargo area passengers can fall out during swerving, braking or on rough roads. The only way to curb these tragedies is to spread the word about the dangers and to petition lawmakers in your area to devise strict penalties for those who don't play by the rules. Encourage others to join in the fight.

Help save a life!

Source: Alaska Tribal Technical Assistance Program

Want a specific seminar or training in your area?
WE WANT TO HEAR FROM YOU!

Let us know if your address has changed.
Visit our website to update your information!

tel (toll free) 866-667-6237 *email* mltrc@umr.edu *website* www.umr.edu/~mltrc

Research, Development and Technology
Quarterly
Missouri Department of Transportation
Vol. 7, No. 1

Flat-Free Tire Sealant Study

Introduction

MoDOT Maintenance Operations frequently have problems with flat tires due to punctures while mowing on our state right-of-way. This causes production down time and expense for tire repair. In addition to tire punctures, there have been problems with porosity leaks when equipment sits idle for several months at a time.

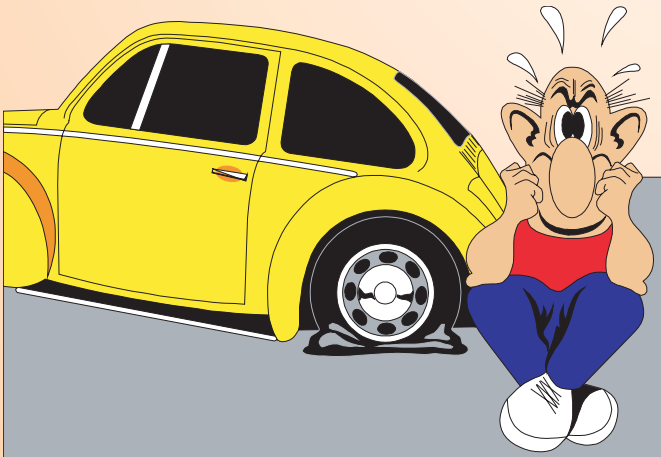
In the past, using tire sealants were not user friendly when tire repairs were necessary. Most tire repair shops would not repair tires with sealant in the tire or they would charge extra to clean up the mess caused from the sealant.

Research Approach

MoDOT Maintenance and General Services business units contacted Research, Development and Technology to study the Flat-Free Tire Sealant product. This product advertises protection against puncture leaks as well as porosity leaks. They also claim their product cleans up with water, which makes it user friendly with tire repair shops.

Two different size tractors were used in this study. The first was a smaller lead tractor, John Deer 5310 equipped with sickle bar mower. This tractor mainly runs on the shoulder to cut grass adjacent to the pavement. Nails and broken glass are examples of hazards encountered by this tractor. The next tractor, John Deer 6410 was larger and pulled a "Batwing" brush hog mower. This tractor is used in ditches and median mowing. Debris lying in the tall grass often punctures these tires.

In order to evaluate the Flat-Free product, it was agreed to place the product into the tires of the two MoDOT tractors for the duration of one mowing season to determine if the product would reduce the amount of flat tires normally encountered. The John Deer 5310 had 12.2 x 24 front tires and 16.9 x 30 rear tires and the John Deer 6410 had 12.6 x 28 front tires and 16.9 x 38 rear tires. Each tire was filled with the manufacturer's suggested amount of Flat-Free Tire Sealant.



Results

During the 2001 mowing season (May – September) only two flats were experienced. Both were on the John Deer 5310. One rear tire was damaged when the sidewall of the tire came into contact with the end of a culvert pipe. The tire was cut and damaged beyond repair. The second incident occurred one morning when a front tire was low. The tire was aired-up and hasn't failed since. These two tractors did not encounter any other tire failures for the remainder of the mowing season.

The cost of the Flat-Free product ranges between 11¢ and 13¢ per ounce. The manufacturer provides an application rate chart for the proper amounts of product to add to the appropriate tire size. For example, the amount of product needed for the 28-inch tractor tire was 160 ounces. The 38-inch tractor tire required 170 ounces. Using an average of 12¢ per ounce, this equates to $19.20 for each 28-inch tire and $20.40 for each 38-inch tire.

The cost of the product to outfit the John Deer 5310 was approximately $70 and the cost for the John Deer 6410 was approximately $80.

From past experience, maintenance would have expected to have ten or more flat repairs during the mowing season for these two pieces of equipment at a cost of $40 for a service call and approximately $40 per flat. The result of this study shows a cost savings using the Flat-Free Tire Sealant for the two tractors was estimated to be $550. This was calculated from using $150 for the cost of the sealant compared to $800 for ten flats at $80 for the service calls and flat repair.

Furthermore, when the tire repair shop replaced the rear tire that was cut, they had no objection working with the tire sealant as far as clean up and user friendliness.

Implementation

Research, Development and Technology recommends the statewide use of Flat-Free in all of our tractor or mower air-filled rubber tire equipment that is susceptible to punctures and porosity leaks. Research will continue to monitor this product through out the implementation of Flat-Free Tire Sealant.

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MoDOT RDT website: www.modot.org/rdt/rdt.htm

FROM IDEAS TO REALITY:

Traffic/Safety TAGs help make it happen

Technical Advisory Groups (TAGs) review and vote on research and new product ideas that could potentially improve MoDOT by improving safety, reducing cost, or saving time. TAG members come from MoDOT business and functional units, FHWA, and universities. Presently Missouri Department of Transportation's Research, Development and Technology business unit supervises six TAGs. These TAGs examine possible projects in different areas: Geotechnical, Operations, Pavements, Project Development/Bridge, Social/Environmental/Economic, and Traffic/Safety.

The Traffic/Safety TAG investigates ideas such as possible ways to improve traffic flow and safety products for the traveling motorist. Potential study ideas and related traffic/safety information can be submitted by MoDOT functional units, state and federal agencies, and vendors. Submissions are made via a Research Idea Statement (RIS) form, and can be given to any Traffic/Safety TAG member. The TAG member will send the information to the team leader, who will arrange a TAG meeting. The TAG usually meets quarterly to vote on products and ideas. Members discuss possible projects and vote to decide if each particular subject could be beneficial to study. If the TAG does agree to investigate a research idea, the topic is forwarded to the RDT Administration team for final review. If the idea is approved at this level, an investigation is initiated.

Investigations are conducted by either by MoDOT personnel or university faculty. The following are examples of current investigations:

SAFETY AND DESIGN IMPROVEMENTS ON A RURAL EXPRESSWAY — UMC

The objective: to provide a means for MoDOT engineers to determine whether particular high-speed rural expressway crossovers are performing satisfactorily and, if not, to assess alternatives for crossover design.

TRAFFIC ADAPTIVE SPEED CONTROL — UMR

The objective: to measure the effectiveness of improving safety, capacity, and mobility using adaptive signal controls and to compare adaptive signal controls strategies with other signal control strategies on Route 100, Manchester Road in the St. Louis area.

SIGN COMPONENT TEST DECK — MODOT

The objective: to determine the proper combination of sign sheeting components to produce visible, durable, and economical signs. With this information, life-cycle charts can be developed for the different sign sheeting material combinations.

Remote Control Flagman

INVESTIGATION OF CENTERLINE RUMBLE STRIPS — MODOT

The objective: to study the effectiveness of centerline rumble strips in reducing the number and severity of head-on accidents and opposite direction sideswipe accidents on high-speed two-lane highways in Missouri.

EVALUATION OF REMOTE CONTROL FLAGMAN — MODOT

The objective: to determine whether the unit will increase work-zone safety, improve productivity, and reduce costs. The RC Flagman is a portable traffic control system that simulates a flagger for short-term lane closures on two-lane highways.

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TECH BRIEFS

Pavement Marking Management Systems

PROJECT DESCRIPTION

This research project involved the study of operational factors for pavement markings and development of a Pavement Marking Management System (PMMS). This PMMS provides an automated system to inventory pavement markings and manage them. The issues involved in the management of markings include quality control, quality assurance, system automation, development of life cycle curves and prioritize re-striping and collection of data. These issues are directly related to many of the operational factors involved in the project. The operational factors included paint thickness, type of beads, type of material and quality control of application. Initial work only was done on these operational factors.

A major component of a management system is a measure for quality/durability. Retroreflectivity was used since FHWA is working on establishing minimum levels. Data was collected with a mobile reflectometer. Retroreflectivity readings can be taken at normal driving speeds. This allows for readings to be taken quickly, accurately and provides one common source of information to enhance quality assurance. By gathering a history of retroreflectivity readings, life expectancy curves can be generated to project when markings should be re-striped according to a set minimum retroreflectivity. The database of retroreflectivity readings on different types of pavement markings with various materials can also be maintained in PMMS. MoDOT has made minimum improvements to in-house pavement markings with waterborne paint since 1990. The ultimate goal of this project was to improve MoDOT's pavement markings.

ADVANTAGES AND DISADVANTAGES

A Pavement Marking Management System provides an automated method to manage pavement markings and not just inventory them. It provides a location and methodology to collect a large amount of information regarding numerous factors that could affect the quality of pavement markings. The PMMS software will require some modification and refinement to fit the needs of the user.

The collection of this information requires commitment from the personnel on the striping train and supervisors to collect the information and input it into the software.

Retroreflectivity readings from a mobile retroreflectometer are needed since they are used as the primary factor in determination of the quality and durability of the markings. Readings are a critical component for the PMMS.

COSTS

We were not able to determine costs at this stage. The actual cost to use PMMS is minimal. In order to provide information to determine the quality and durability of pavement markings, retroreflectivity readings are required. The collection of these readings will be the primary additional cost for PMMS.

Other costs associated with the operational factors from the research project will depend on actual changes made in operations.

CONCLUSIONS

Numerous conclusions were generated from the study:

1. MoDOT needs to change emphasis on in-house pavement markings from quantity to quality.

2. Statewide technical assistance, training and verification of consistent processes are needed for better quality control.

3. If waterborne pavement markings are applied appropriately, some roads do not need to be re-striped every year.

continued on next page...

continued...

4. Application rates of 15 mils wet thickness of paint with 8 pounds of Type 1 beads per gallon should be increased to 17 mils wet thickness of paint with 10 pounds of Type L beads (some districts) per gallon. Additional research is needed on application rates to determine which rates are appropriate for optimum durability and retroreflectivity with consideration being given to the area of the state where the stripe is located.

5. New pavement surfaces should receive a heavier one-time application of material or be striped twice in a season. Standard application rates should be based on the porosity of the surface.

6. MoDOT needs to do further testing to obtain accurate information on the best combination of beads and paint thickness to yield the best markings for retroreflectivity and durability.

7. MoDOT should change from 2nd generation to 4th generation waterborne paint using resins.

8. Retroreflectivity readings taken by a Laserlux retroreflectometer are needed on in-house markings of a sufficient size sample for quality assurance.

9. Funding needs to be set up for readings to be taken with a Laserlux mobile retroreflectometer.

10. Retroreflectivity readings from Mirolux 30, LTL 2000 and the Laserlux do not directly correlate with each other and should not be compared to each other.

11. In-house pavement markings outperformed contractor applied markings in District 7.

12. The commitment needs to be made and a program implemented that ensures durable markings are maintained as durables and not just forgotten about and striped over with waterborne paint.

For more information, contact Don Davidson:
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www.modot.org/rdt/rdt.htm.

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RESEARCH IDEA STATEMENT

Check the appropriate area(s): ❒ Geotechnical ❒ Operations ❒ Pavements ❒ Traffic/Safety
❒ Social/Environmental/Economic ❒ Project Development/Bridge

IDEA TITLE: _____

IDEA STATEMENT: _____

_____

OBJECTIVE: _____

_____

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APPLICATION(S)/BENEFIT(S): _____

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_____

KEY WORD *(Key words are needed to assist in literature search for research idea subject):*

_____

_____

DATE: _____

NAME: _____ **TITLE:** _____

ORGANIZATION: _____ **DIV/DIST:** _____

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PHONE: _____

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